

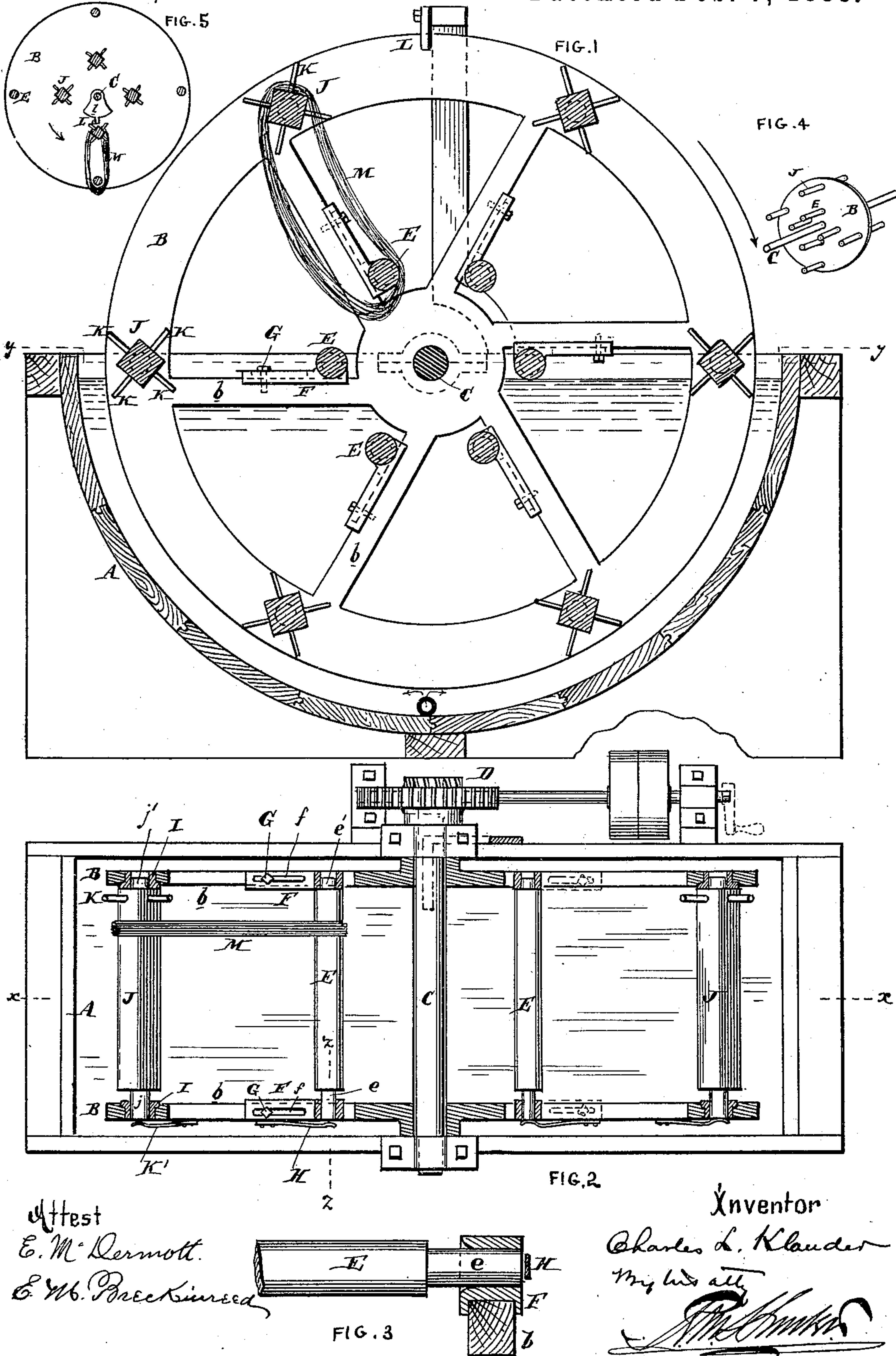
(No Model.)

C. L. KLANDER.

DYEING OR SCOURING MACHINE.

No. 377,393.

Patented Feb. 7, 1888.



Attest
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[Signature]

UNITED STATES PATENT OFFICE.

CHARLES L. KLANDER, OF PHILADELPHIA, PENNSYLVANIA.

DYEING OR SCOURING MACHINE.

SPECIFICATION forming part of Letters Patent No. 377,393, dated February 7, 1888.

Application filed June 4, 1887. Serial No. 240,218. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. KLANDER, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Dyeing or Scouring Machines, of which the following is a specification.

My invention has reference to machines for dyeing or scouring yarns; and it consists in certain improvements, all of which are fully set forth in the following specification, and shown in the accompanying drawings, which form part thereof.

The object of my invention is to accomplish in a simple and inexpensive manner what has heretofore been done by hand in a very laborious process. In addition to the great saving incident to accomplishing the result by machinery in place of hand-manipulation, I am enabled to perform the work of dyeing and scouring in a more effective and thorough manner with far less care and watchfulness on the part of the operators—a feature which is of vital importance, particularly where a large amount of yarn is to be dyed of a uniform tint.

Drying-machines have been proposed in which rotating frames were provided with cross-bars upon which the yarn to be dried was placed, and while in that condition be treated with air-currents by a central fan. Provision has also been made to gradually turn the yarn; but as far as I am aware a dyeing-machine has not been constructed embodying the principles set out in this application, to wit: treating the yarns in a stretched condition alternately to the dye-liquor in a dye-tank, and then to the atmosphere, causing the yarn to be shifted upon its supporting-bars, so as to expose every portion of its lengths.

In carrying out my invention I provide a suitable frame or wheel adapted to rotate or move into and out of a dye or other liquid contained in a suitable tank, and to this frame or frames I secure suitable transverse bars or supports upon which the yarn-skeins are hung. These bars are preferably arranged in two concentric sets, and the skeins connect from bars in one set to bars in the other set, so as to be substantially in radial lines from the axis of the supporting-frame. The yarns so carried are caused to be moved slowly into and out of the dye or other liquid in the tank or vat, be-

ing alternately immersed and exposed to the action of the atmosphere. To insure all portions of the yarn being treated alike, one at least of these transverse bars or supports for each skein is caused to rotate slowly, and, preferably, intermittently, whereby the yarn is constantly shifting its position upon the transverse bars. For convenience in placing the yarn upon the transverse bars, they are preferably made removable, or at least so arranged as to expose one end, whereby the yarn may be placed upon the said bars and thereby supported in the machine in operative position for treatment. The bars, which are adapted to support each skein, may be made relatively adjustable to or from each other to suit skeins of different lengths. It is immaterial, so far as my invention is concerned, what the construction of the cross-bar-supporting frame may be, or, in fact, as to the specific construction of the supporting-bars themselves, or the means employed to rotate them, as there are many ways of accomplishing the same result, which would be perfectly evident to any skilled mechanic.

In the drawings, Figure 1 is a sectional elevation of my improved yarn dyeing or scouring machine on line *xx* of Fig. 2. Fig. 2 is a sectional plan view of same on line *yy* of Fig. 1. Fig. 3 is a cross-section on line *zz* of Fig. 2, showing the means of supporting and removing the transverse bars. Fig. 4 is a perspective view of a modified form of yarn-supporting frame and cross-bars; and Fig. 5 is a sectional elevation of the frame and cross-bars, similar to that shown in Fig. 1, but with a modified arrangement of said bars and the means for rotating them.

A is the dye tank or vat for containing the dye or scouring-liquid, and may be made of any suitable shape, that shown being the most preferable. A steam-pipe may be arranged at the bottom to heat the said liquor by forcing steam through it. Journaled in said vat is an axle, C, to which is secured two lateral wheels or frames, B B, having the arms *b*. The particular shape of these frames is immaterial. Supported by and between these frames B are the transverse bars or rollers J and E, preferably arranged in two series and concentric with the axle C. The outer series of rollers or transverse bars, J, are preferably

polygonal in shape, so as to more readily move the yarn which is hung upon them. The ends of these bars J are made with journals $j j'$, which fit into bearings I, secured to the frame B.

5 The journal j is first thrust into its bearing and forced against the retaining-spring K' until the other journal, j' , comes within its bearing, and then the bar is shifted longitudinally into the position shown in Fig. 2, and

10 the spring K' retains it in such attached position with freedom of revolution. By this means the bar can be readily removed for removing the dyed yarn M and inserting new skeins upon it. Secured to the face of this

15 bar J, and preferably near one end, are pins or projections K, which, as the bars are carried around with the frame B, are caused to strike the stop L, and made to revolve a portion of the revolution. This stop L is preferably ar-

20 ranged directly above the axle C, so as to act upon the successive bars when they are in such a position that the skeins are hanging wholly upon them, or at least clear of the liquor in the tank. It is evident that the stop L

25 and the pins K are, in effect, similar to a rack and pinion. This will cause an intermittent rotation to the bars J during their travel around the axis C; but it is evident that they might be readily made to continuously revolve

30 with a very slow motion, so as to make only a portion of a revolution with a full revolution of the frame B. The inner transverse bars or rollers, E, are supported in adjustable bearings F, made adjustable on the arms b , to and from

35 the bars J, by means of slots f and clamping-screws G, the distance apart of the bars J and E being made adjustable to suit skeins of different lengths. The bars E are provided with

40 journals e and e' , which fit into the bearings F and are retained in operative position by the springs H, carried by one of the bearings F for each bar. It is thus made removable, substantially in the manner as in the case of the bar J.

45 The frame B, with its transverse bar, is caused to revolve slowly by worm and worm-wheel gearing D, or other suitable means. It is immaterial whether the ends of the bars E are reduced or not, as the diameter of the

50 journals $e e'$ might be the full diameter of the bars themselves, and the means of adjustment might be greatly modified by any capable mechanic without changing the object of the invention.

55 In the construction shown in Fig. 5 we have the bars J located next to the axis C, and the bars E arranged near the periphery of the frame B, or just the reverse of what is shown in Fig. 1; and in this case the stop L may be

60 transferred to the axis C, which stop may be in the form of a heavy weight, l , maintaining its position by gravity. In place of having two frames B, between which the bars are supported, a single frame may be used, as

65 shown in Fig. 4, in which case the bars J and E would project upon both sides, these modifications being merely evident variations which

might be resorted to. When loading or unloading the machine, the worm may be revolved by hand through the agency of a crank, 70 indicated in dotted lines, Fig. 2.

It is preferable to make the frame B of wood, and to form the bearings F and I of porcelain or vitreous material and annealed to withstand the heat of the liquor in the tank A. The use 75 of metal should be avoided as much as possible, owing to the corrosive action of the dye-liquor. In place of hanging the skeins M in radial lines from the axis C, they might be arranged between two of the bars J, or at right 80 angles to such radial lines, though the former is preferred. While the shape given to the bars J and E is found most desirable for the manipulation of the yarns, yet I do not limit myself to any particular cross-section, as such 85 changes would not materially modify the invention. Therefore, while I prefer the construction of the machine here shown I do not limit myself to the details thereof, as they might be modified in various ways without de- 90 parting from the spirit of the invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a dyeing or scouring machine, the 95 combination of a dye or liquor tank, a central shaft, a frame secured thereto and revolving partly in and partly out of the dye or other liquor in said tank, removable cross-bars or supports arranged upon said frame and at a 100 distance apart sufficient to sustain the skeins of yarn, and adjustable to or from each other for different lengths of skeins, and means to lock said cross-bars in position upon the frame, whereby said skeins of yarn are carried around 105 with the frame and passed through the liquor and then exposed to the atmosphere.

2. In a dyeing or scouring machine, the combination of a dye or liquor tank, a central shaft, a frame secured thereto and revolving 110 partly in and partly out of the dye or other liquor in said tank, cross-bars or supports arranged upon said frame and at a distance apart sufficient to sustain the skeins of yarn, and means arranged above the tank and substan- 115 tially above the axis of the revolving frame to intermittently rotate one or more of said cross-bars, whereby said skeins of yarn are carried around with the frame and passed through the liquor and then exposed to the at- 120 mosphere.

3. The combination of a dye or liquor tank, a frame partly supported therein, inner and outer sets of cross-bars carried by the frame, upon which the skeins of yarns to be treated 125 are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, and suitable means to move the frame through the tank and rotate the cross-bars.

4. The combination of a dye or liquor tank, 130 a frame partly supported therein, inner and outer sets of cross-bars carried by the frame, upon which the skeins of yarns to be treated are hung, one of said sets of bars being adapted

to rotate to gradually turn the yarn, pins or extensions on said rotatable cross-bars, and a stationary stop in the path of said pins whereby as the frame carries the cross-bars past the stop the pins thereon strike the stop and impart to the bar a portion of a revolution.

5 5. The combination of a dye or liquor tank, a frame partly supported therein, inner and outer sets of cross-bars carried by the frame, upon which the skeins of yarn to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, pins or extensions on said rotatable cross-bars, and a stationary stop arranged above the tank in the path of said pins, whereby as the frame carries the cross-bars past the stop the pins thereon strike the stop and impart to the bar a portion of a revolution.

15 6. The combination of a dye or liquor tank, a frame supported partly therein, inner and outer sets of cross-bars carried by the frame, upon which the skeins of yarns to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, pins or extensions on said rotatable cross-bars, and a stationary stop in the path of said pins, whereby as the frame carries the cross-bars past the

stop the pins thereon strike the stop and impart to the bar a portion of a revolution when the cross-bar and its yarns are raised clear of the dye-liquor.

7. The combination of a dye or liquor tank, a frame adapted to pass into and out of the liquor contained therein, and two sets of transverse yarn-supporting bars arranged upon said frame and movable therewith through the liquor, means to rotate one of said sets of bars, and devices to relatively adjust the two sets of bars to or from each other.

8. The combination of a dye or liquor tank, a frame adapted to pass into and out of the liquor contained therein, and two sets of transverse yarn-supporting bars arranged upon said frame and movable therewith through the liquor, one of said sets of cross-bars being made polygonal in cross-section and the other set made round in cross-section, and means to rotate the polygonal set of cross-bars.

In testimony of which invention I hereunto set my hand.

CHAS. L. KLANDER.

Witnesses:

R. M. HUNTER,
GEO. W. REED.

Correction in Letters Patent No. 377,393.

Affidavit having been filed showing that the name of the patentee in Letters Patent No. 377,393, granted February 7, 1888, for an improvement in "Dyeing or Scouring Machines," should have been written and printed *Charles L. Klauder* instead of "Charles L. Klander," it is hereby certified that the proper correction has been made in the files and records of the case in the Patent Office, and should be read in the said Letters Patent that the same may conform thereto.

Signed, countersigned, and sealed this 13th day of March, A. D. 1888.

[SEAL.]

Countersigned:

R. B. VANCE,

Acting Commissioner of Patents.

D. L. HAWKINS,
Assistant Secretary of the Interior.